

Notice of Allowability

Application No.

09/852,033

Examiner

Tiffany A. Fetzner

Applicant(s)

ZHANG, GUOPING

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/17/2006.
2. ☒ The allowed claim(s) is/are 1-12, 14-23, and 25-33 of the Jan. 26th 2006 amendment and response.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☒ hereto or 2) ☒ to Paper No./Mail Date 02/18/2006.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Examiner's Comment

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(e) which papers have been placed of record in the file.

Drawings

2. The new formal drawings filed **January 17th 2006** resolve the Examiner's drawing concerns of the September 14th 2005 Office action, and include the approved red ink drawing changes of the September 29th 2003 amendment response to figures 5, 8B, 11 and 13A; in combination with the amendments to the disclosure concerning the drawings of the September 29th 2003 amendment response. [See also the remarks on pages 19 and 20 of the applicant's September 29th 2003 submission.]
3. A New full set of corrected drawings are required in this application because the Official draftsman has objected to the drawings filed January 17th 2006, which have some of the graph lines extend through the labeled data boxes, in some figures. (i.e. figures **15A, 15B, 16A, 16B, 16C, and 16D**. [See the attached PTO 948 form.]
4. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

5. The objections to the disclosure from the office action of March 28th 2003 are **rescinded** in view of the September 29th 2003 amendment response.

Canceled claims

6. **Claims 13, 24 and 34-70** have been canceled as per applicant's September 10th 2004 Amendment and response.

Claim Objections Rescinded

7. **Claims 1-12, 14-23, and 25-33** are no longer objected to because the applicant's **January 17th 2006** Amendment and response, corrects the objections noted in the September 14th 2005 office action. The examiner notes that the resubmission of the

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September 10th 2004 amendment and response corrects the fax submission problem of the 4mm black line passing through the right hand side of all pages and all text of the September 10th 2004 Amendment and response.

9. The amendments made to **claims 1, 3, 5, 9, 10, 14-20, 25 and 32**, in the **January 17th 2006** amendment and response are free of new matter because they correct typographical errors, and ensure positive recitation of what applicant's original specification discloses as applicant's invention, which resolves the issue of "intended use" within applicant's apparatus / system claims.

Response to Arguments

10. Applicant's remarks / arguments filed 01/17/2006 have been fully considered and they are persuasive.

11. Applicant's arguments filed September 10th 2004 have been fully considered and are persuasive at overcoming the prior art of **Kasten et al.**, because the amended claims of September 10th 2004 now require that the pulse sequences used throughout the claims, are: dynamic, non-standard, and "on the fly" manipulations of, and modifications to, said graphical representations of the pulse sequence(s) applied in real time, in a manner that is distinguishable from the "canned only" approach of **Kasten et al.**, which is not capable of non-standard pulse modifications. The examiner agrees that the **Kasten et al.**, reference uses only a "canned" customization approach to magnetic image sequencing formation as per page 9 paragraph 4 of the September 10th 2004 arguments and response, which is not capable of non-standard customizations in real-time.

Double Patenting Overcome by Terminal Disclaimer of Sept.20th 2005.

12. The double patenting rejections from the September 14th 2005 office action with respect **Claims 1-12, 14-23, and 25-33** which were **rejected** under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **claims 1-44** of U. S. Patent No. **6,801,037** are **rescinded** in view of applicant's timely filed **terminal disclaimer of September 20th 2005**

13. The examiner notes that the applicant's timely filed **terminal disclaimer of September 20th 2005** resolves the problem of establishing a patentable distinction

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in these conflicting but not identical claims because the MRI initializing user interface of the instant application is an MRI system component usable with applicant's U. S. Patent No. **6,801,037** MRI system. Both the instant application and U. S. Patent No. **6,801,037** have features, and limitations, which cause the scope of the claims in these applications to overlap. The patent and the instant application are related as combination / subcombination. The instant applications interface is compatible with applicant's already patented MRI system of the U. S. Patent No. **6,801,037** and therefore the scope of the claims in both the application and patent cover the same novel aspects even though the claims are not word-for-word identical.

The following is an examiner's statement of **Reasons for Allowance**:

14. With respect to **independent claims 1 and 19** from the **January 17th 2006** amendment and response, these claims are considered to be allowable by the examiner because the prior art of record does not teach or show:

Claim 1 --- A user interface operable to create, on a display device, a window displaying a plurality of menu editor items for user selection, said menu editor items comprising:

a sequence editor item **that creates an RF pulse sequence** from at least one value; and

a **sequence tailor editor item configured for user interaction with a graphical representation of a selected pulse sequence**, wherein **during said user interaction, the selected pulse sequence is graphically displayed to the user**,

said user interaction including **dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation of said selected pulse sequence that is currently undergoing user interaction with real time visual feedback of the interaction on the manipulated pulse sequence to the user**, and

wherein said menu editor items further comprise **an MRI scan setting menu editor item configured for initiation of a magnetic resonance imaging scan**.---

Claim 19 ---A method for creation and customization of pulse sequences, said method comprising the steps of:

creating a window on a display device, **said window** displaying a plurality of menu editor items for user selection;

displaying a sequence editor item **operative in** creating an RF pulse sequence from at least one of user-entered values and default values;

displaying a sequence tailor editor item **in order to assist** user interaction with a graphical representation of a selected pulse sequence; and

displaying, graphically, said pulse sequence to the user,
said user interaction including dynamic, non-standard and on-the-fly manipulation of and modification to, said graphical representation of said selected pulse sequence that is currently undergoing user interaction with real time visual feedback of the interaction on the manipulated pulse sequence to the user, and

wherein said method further comprising the steps of:

initiating a magnetic resonance imaging scan by activating a scan setting menu editor item within said window on said display device; and

displaying at least one setting **of an** imaging parameter. ---

15. These **Terminally disclaimed amended claims** are considered to be allowable over the prior art because each of these claims contain the novel and non-obvious features, summarily of **a user interface with an MRI scan setting menu editor item configured for a magnetic resonance imaging scan** with a display including menu editor items permitting **a graphical representation of a magnetic resonance pulse sequence**, with **user interface allowing creation and interaction between a user and the display** with the user interaction including **dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation of a selected pulse sequence, that is currently undergoing user interaction with real time visual feedback of the interaction on the resultant modified pulse sequence** being provided **to the user**. It is the combination of these features taken in combination

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with one another that is the feature of novelty in each of applicant's independent claims, and it is this feature that distinguishes applicant's application from the prior art.

16. The prior arts of record do not teach, suggest, or show a magnetic resonance device, which includes the combination of features provided above. The examiner agrees with applicant's arguments in the **September 29th 2003** and **September 10th 2004**, remarks, that the **Kasten et al.**, reference fails to show **dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation of a selected pulse sequence, that is currently undergoing user interaction with real time visual feedback of the interaction on the resultant modified pulse sequence provided to the user**, and instead simply combines previously available graphically represented, "canned" pulse sequences to the user. In **Kasten et al.**, the user selects a series of conventional pulse types, from which to construct or concatenate an MRI pulse sequence. Applicant's method, and system is novel over **Kasten et al.**, and the other prior arts of record in that in the instant application the user is able to perform **dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation(s) of a selected magnetic resonance pulse sequence, that is currently undergoing user interaction with real time visual feedback of the interaction on the resultant modified pulse sequence provided to the user**.

17. The user of applicant's invention is able to change and modify, through the visual feedback of the interaction, the MRI pulse sequence in a **dynamic, non-standard and on-the-fly** manner which is being performed in real time, by interacting with the display of applicant's invention. The prior art does not allow these aspects in designing, constructing, and performing a magnetic resonance pulse sequence. Applicant's invention enables the "canned" conventional pulse sequences of prior art references, such as **Kasten et al.**, to be changed, altered, varied, and adapted, with the user able to receive visual feedback of the alterations to the pulse sequence, that the user is performing, in real time.

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18. Applicant's invention is **not** a concatenation, of the "canned" MRI pulse sequences, and pulse sequence components of the prior art. Applicant's invention, is novel in that the applicant's invention through the **dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation(s) of a selected magnetic resonance pulse sequence** enables completely custom, situational optimized magnetic resonance pulse sequences to be designed, which are not constrained by the intrinsic aspects of the established, conventionally well-known MRI pulse sequences, of the prior art of record.

19. It would not have been obvious to one of ordinary skill in the art, at the time that the invention was made because applicant's claim requires a combination of features that teach away from what is available and known in the prior art of record, and therefore applicant's invention is considered to be both novel and nonobvious by the examiner.

20. With respect to **amended dependent claims 3, 5, 9, 10, 14-18, 20, 25, 32 and dependent claims 2, 4, 6-8, 11, 12, 21-23, 26-31, and 32** from the **January 17th 2006** amendment and response, these claims are considered to be allowable by the examiner because they each depend from an allowable independent claim.

Prior Art of Record

21. The **prior art made of record** and not relied upon is considered pertinent to applicant's disclosure.

A) ***Whayne et al.**, US patent 6,014,581 issued January 11th 2000 entitled "Interface for Performing a diagnostic or therapeutic Procedure on the Heart Tissue with an Electronic Structure". Other related class/subclasses include: 600/525; 600/300; 128/920.

B) ***Kasten et al.**, US patent 5,317,260 issued May 31st 1994.

C) **Haney et al.**, US patent 4,191,919 issued March 4th 1980.

D) **Keller et al.**, US patent 5,041,789 issued August 20th 1991.

E) **Hoenninger, III** US patent 5,465,361 issued November 7th 1995.

F) **Kasuboski** US patent 5,349,294 issued September 20th 1994.

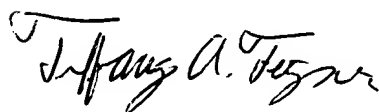
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- G) **Hoshino et al.**, US patent 6,484,048 B1 Issued November 19th 2002 ; filed October 21st 1999.
- H) **Rittman, III et al.**, US patent 6,451,015 B1 issued September 17th 2002, filed November 18th 1998.
- I) **Rittman, III et al.**, US patent application publication 2003/0032951 A1 published February 13th 2003, filed November 18th 1998. which corresponds to **Rittman, III et al.**, US patent **6,451,015 B1** issued September 17th 2002, filed November 18th 1998.
- J) ***Zhang US patent 6,801,037** issued October 5th 2004 which is applicant's own issued patent which has been terminally disclaimed from the instant application, and is therefore not available as prior art against the claims of the instant application.

Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.



TAF
February 18, 2006



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800